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ABSTRACT

A study examined the status of tech prep in Missouri as of 1993-1994. Data were gathered from a review of the request for proposals of Missouri's 12 consortia, assessment of Missouri's current status of tech prep, and structured interviews with the 12 tech prep coordinators. It was determined that up to 86 secondary schools were initially involved in local tech prep consortia. Typical tech prep consortia involved seven secondary and one postsecondary school. Seven consortia had addressed business and industry participation; however, no consortium included a four-year college or university. Most consortia were in the initial stages of establishing articulation agreements, conducting student recruitment/outreach, conducting tech prep staff development, and designing tech prep programs around career clusters. Business/industry involvement in tech prep was largely limited to an advisory role. Other identified barriers to tech prep were as follows: late receipt of funding; resistance to systematic reform; turfism among academic, vocational, secondary, and postsecondary faculty/administration; and persistent negative student/public attitude toward "vocational" programs. Program effects were difficult to measure because many consortia were still in the process of developing programs and determining whom to consider tech prep students. (Contains 17 references and 3 tables. Eighteen additional tables are appended.) (MN)

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STATUS OF Tech Prep IN MISSOURI

1993 - 1994

Final Report
Project Number 9311343-1

July 1994

Submitted to:

Division of Vocational and Adult Education • Department of Elementary and Secondary Education
Jefferson City, Missouri

CE 066 369

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Status of Tech Prep in Missouri

1993-94

Final Report
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Submitted to:

Division of Vocational and Adult Education
Department of Elementary and Secondary Education
Jefferson City, Missouri

Submitted by:

Sheila Ruhland
Rod Custer
Bob Stewart

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Review of Literature

Educational evaluation has developed dramatically over the last 20 years. Attempts have been made to clarify the meaning of evaluation and to put into perspective the classifications of evaluation approaches. Numerous definitions for evaluation can be found in the literature. An accepted definition for evaluation has been the providing of information for decision making (Cronbach, 1963, & Alkin, 1969, & Stufflebeam, et al. 1971). Worthen and Sanders (1973) expanded this definition further to include the "determination of the worth of a thing to include obtaining of information for use in judging the worth of a program, product, or procedure" (p. 19). Stufflebeam and Webster (1980) defined educational evaluation as "one that is designed and conducted to assist some audience to judge and improve the work of some educational object" (p. 6). Recently the joint committee on standards (1981) for evaluation published their definition of evaluation as "the systematic investigation of the worth or merit of some object" (p. 12).

Program evaluation data may be collected for three major purposes (Chelimsky, 1985). These purposes include: (a) policy formulation, to assess and or justify the need for a new program; (b) policy execution, to ensure that a program is implemented in the most cost effective way; and (c) accountability, to determine the effectiveness of an operating program and the need for continuation, modification, or termination.

Research has been conducted to assess vocational and educational program evaluation, and to identify outcome indicators for programs (Hoachlander, 1991; Strickland & Asche, 1987; Weiss, 1972). Limited research has been done to specifically identify the outcome indicators for Tech Prep programs. An outcome indicator is used to determine the program quality, effectiveness, and goal attainment. Dornsife (1991) identified outcome indicators to include percentage of course enrollment, program competitions, job placement, number of articulated classes, number of articulated agreements, marketing activities, staff development, advising, and student tracking.

Hammons (1992) identified six focus component groups from which outcome indicators could be grouped. The student component indicators include student retention, grade point average, and demonstration of job competency. The facilitator component includes faculty professional development, guidance programs, and access to special populations. The professional development component relates to obtaining information related to academic and vocational skills attainment and advanced courses taken. The attitudes/perceptions component includes recognition and level of satisfaction with the program. The careers focus component evaluates job placement, employment levels, and earning levels. The sixth component, resources, identifies the quality and quantity of resources utilized.

A study was conducted by Bragg and Layton (1992) to determine the status of Tech Prep. Data were collected related to Tech Prep

philosophies and policies, staffing, administrative structure, evaluation, marketing, and staff development. A list of outcomes was presented to the respondents to ascertain if they had been established in their states. It was reported by Bragg and Layton "since fewer than forty percent of the states have established outcomes (for Tech Prep) at the state level, a major concern for all leaders at all levels should be the identification of expected outcomes and evaluation procedures" (pp. 4-17).

A recent study by Roegge, Wentling, Leach, and Brown (1993) found that using the concept mapping process assisted with displaying the major components for Tech Prep programs. They identified the relationships between the components and priorities placed on each component and cluster of related components. The concept mapping process provided a pictorial representation of Tech Prep stakeholder's perceptions. Clusters identified included benefits, populations served, outcomes, program components, enrollment incentives, external involvement, planning and support, staff development, and articulation/integration.

The literature contains several studies that were conducted to identify outcome indicators for program evaluation. The indicators varied based upon the purpose of the evaluation. No model was found that specifically applied to the evaluation of Tech Prep programs and the identification of specific outcome indicators. Therefore, this study was framed to collect data and to establish a process to provide information about the Tech prep programs in Missouri.

The Development of Tech Prep in Missouri

The following description of Tech Prep Education in Missouri was distributed at the 1993 Cooperative Conference for School Administrators conducted by the Department of Elementary and Secondary Education (DESE) (1993).

The Tech Prep Education initiative started by asking eligible recipients who were interested in Tech Prep Education to respond to a Request for Proposal (RFP). Eligible recipients were asked to respond to six specific goals identified in the federal legislation. The identified goals are:

- Encourage students to develop new learning techniques necessary to meet the challenges of a technological society,
- Integrate academic and technical instruction,
- Restructure vocational and academic education curriculum,
- Expand education and technical options for student
- Increase competencies of high school students in the areas of math, science, communication skills and problem-solving skills, and
- Increase student enrollment in vocational programs by emphasizing opportunities for college program study.

RFPs specifically addressed how the Tech Prep Education concept would be carried out under an articulation agreement between the participants in the consortium.

> Articulation is defined as a process for coordinating the linking of two or more educational systems within a community to help students make a smooth transition from one level to another without experiencing delays, duplication of courses or loss of credit.
>
> Project proposers were asked to include the development of Tech Prep Education curricula appropriate to the needs of the consortium participants which must consist of the two years of secondary school preceding graduation and two years of higher education, or an apprenticeship program of at least two years proficiency in mathematics, science, communications, and technologies designed to lead to an Associate Degree or certificate in a specific career field (DESE, 1993, pp. 4-5).

The Department of Elementary and Secondary Education received nine project applications in fiscal 1993 which was the first year of funding. Six of the nine applications were approved for three years (1992-94) with funding up to $350,000 for the three-year time period. Six additional projects were approved and funded the second year (1993-95).

Approved Tech Prep Education projects:

- Include inservice training for teachers that is designed to train teachers to effectively implement

Tech Prep Education curricula, and provide for joint training for teachers from all participants in the consortium,

- Include inservice training for guidance counselors designed to effectively recruit students into the Tech Prep educational system, ensure their success in completing the program, and to ensure that students are appropriately placed in employment,
- Provide equal access to the full range of technical preparation programs to individuals who are members of special populations, including the development of Tech Prep educational services appropriate to the needs of such individuals, and
- Provide for preparatory services to assist all participants (DESE, 1993, pp. 7-9).

The approved Missouri Tech Prep Education consortia includes:

LINN TECHNICAL COLLEGE
J. Rick Mihalevich, Coordinator
Mid-Missouri Tech Prep Consortium
Linn Technical College
One Technology Drive
Linn, Missouri 65051

STATE FAIR COMMUNITY COLLEGE
Clark Harris, Coordinator
Heart of Missouri Technical Education Consortium
State Fair Community College
3201 West 16th Street
Sedalia, Missouri 65301

NORTH CENTRAL MISSOURI COLLEGE
Bill & Carol Gutshall, Coordinators
North Missouri Tech Prep Consortium
North Central Missouri College
1301 Main Street
Trenton, Missouri 64683

METROPOLITAN COMMUNITY COLLEGE
Jim Everett, Coordinator
Northwest Missouri Tech Prep Consortium
High Technology Training Resource Center
The Metropolitan Community College
3200 Broadway
Kansas City, Missouri 64111

EAST CENTRAL COLLEGE
Debbie Jaeger, Coordinator
East Central Missouri Tech Prep Consortium
East Central College
P.O. Box 529
Union, Missouri 63084

Larry Gorsh, Tech Prep Coordinator
Rolla Technical Institute
1304 East Tenth Street
Rolla, Missouri 65401

MINERAL AREA COLLEGE
Dr. Ray Walsh, Coordinator
Southeast Missouri Tech Prep Consortium
Mineral Area College
P.O. Box 1000
Park Hills, Missouri 63601

THREE RIVERS COMMUNITY COLLEGE
Sue Waggoner-Flowers, Coordinator
Bootheel Tech Prep Consortium
Three Rivers Community College
2080 Three Rivers Boulevard
Poplar Bluff, Missouri 63901

OTC-GRAFF CAREER CENTER
Marc Doss, Coordinator
Heart of the Ozarks Tech Prep Consortium
Ozark Technical College
815 North Sherman
Springfield, Missouri 65802

PIKE/LINCOLN TECHNICAL CENTER
Bob Kirkpatrick, Coordinator
Mid-Rivers Tech Prep Consortium
Pike/Lincoln Technical Center
P.O. Box 38
Éolia, Missouri 63344-0038

ST. LOUIS COMMUNITY COLLEGE
Marcia Pfeiffer, Coordinator
St. Louis Area Tech Prep Consortium
St. Louis Community College - Forest Park
5600 Oakland Avenue - F324
St. Louis, Missouri 63110-1393

MOBERLY AREA COMMUNITY COLLEGE
John Ross, Coordinator
Moberly Area Community College
College and Rollins
Moberly, Missouri 65270

RAYTOWN
Ron Youngs, Coordinator
Construction Apprenticeship Tech Prep Consortium
105 W. 12th Avenue
North Kansas City, Missouri 64116

Objectives of the Project

1. To describe how Tech Prep has been conceptualized in Missouri.

Related objectives included:

- To identify and interpret the mission and goals of each Tech Prep consortium,
- To look for commonalities/differences, unique patterns among the goals and missions of Missouri Tech Prep consortia,
- To identify, categorize, and describe general characteristics of each consortium (e.g., geographic size, characteristics of the region, number of participating schools, characteristics of the coordinator, institutional history in articulation, level of commitment, etc.),
- To describe the organizational structure (administration, committees, and responsibilities), and

- To describe the operating environment and context of each consortium (attitudes, finance, logistics, etc.).

2. To describe the processes undertaken as a part of each Tech Prep initiative. The areas of study included:
   - Marketing
   - Articulation and Collaboration
   - Curriculum
   - Evaluation
   - Student Program Planning and Implementation
   - Staff development
   - Program barriers
3. To identify the outcomes associated with Tech Prep implementation. Potential outcomes included:
   - Policy changes (relationships among/within institutions, educational reform)
   - Faculty attitudes and practices (collegiality, views of vocational education, approach to teaching and curriculum development)
   - Changes in curriculum and instructional practices (integration of academic and vocational content)
   - Labor market changes (job patterns, hiring practices)
   - Special populations
   - Articulation (type, number, style, etc.)
4. To determine relationships among Tech Prep outcomes and:
   - Mission and implementation models

- Characteristics of the consortia
- Implementation processes

Procedures

Two overall research goals were identified to collect data to meet the objectives of the project. The first goal was to describe Tech Prep in Missouri. This involved an analysis of each of the state's Tech Prep RFPs to determine their philosophy, purpose, scope, and mission. This was essential to build an overview of Tech Prep conceptualization as it is structured and evolving on a statewide basis. The second goal was to describe the processes undertaken as a part of each Tech Prep initiative. This area outlined and detailed the specific activities and approaches each consortium was taking to implement Tech Prep. The process involved developing categories within which Tech Prep implementation could be analyzed. These categories which were designed to provide a structure for baseline data organization included the following:

- Articulation and collaboration
- Student program planning and implementation
- Staff development
- Curriculum development
- Marketing efforts
- Program effects
- Evaluation strategies

A summary of the major activities completed as part of this project during 1993-1994 included: (1) a review of the 12

consortium's RFPs, (2) an assessment of Missouri's current status of Tech Prep, (3) the development of a Tech Prep coordinator survey, (4) a pilot test of the coordinator survey, (5) structured interviews to gather data from the 12 tech prep coordinators (see Appendix A), and (6) and analysis of the data. The information to be collected was to identify Missouri specific data which was not submitted by the consortia in the national report managed by Mathematica Policy Research, Inc. (MPR, 1994) on the form, "Inventory of Local Tech-Prep Planning and Implementation, Fall, 1993." However, Missouri data from the national study were reviewed as a part of this study. Appropriate tables from the MPR are attached to this report.

Findings

An analysis of the 12 consortium's Tech Prep RFPs submitted in 1991, 1992, and 1993 indicated that as many as 86 secondary schools were initially involved in a local Tech Prep consortium. A typical local Tech Prep consortium involved 7 secondary and 1 postsecondary school. On the average, 7 of the 12 consortia addressed business and industry participation, and no four-year colleges and universities were included in the consortiums. However three consortia indicated they were in the discussion stage with a four-year institution.

Data from Tables 1, 2, and 3 of the MPR study indicated that as many as 210 secondary districts were involved with the 12 Tech Prep Consortia in Missouri by the fall of 1993. The consortium governing boards involved district and school administrators at

both the secondary and post-secondary level, as well as faculty and representatives of business and industry. The distribution of faculty and business and industry representatives varied among the consortia. The average FTE staff in the Tech Prep Consortia in Missouri was 1.2, with the range of 1 to 3 persons involved.

Vocational educators are leading the reform movement. Of those involved in Tech Prep programs, vocational faculty, counselors and administrators were represented more often than academic faculty. Fifty percent of the Tech Prep coordinators had held their jobs for longer than 24 months.

The funding for Tech Prep included the following requests and types of allocations as noted in Tables 1, 2, and 3.

Table 1

Distribution of Funds by Year

	Year 1	Year 2	Year 3
Program administration	53%	38%	71%
Staff development	27%	25%	15%
Equipment purchases	2%	14%	1%
Curriculum development	1%	6%	1%
Curriculum materials	*%	3%	3%
Promotions and marketing	4%	5%	2%
Travel	13%	10%	7%
Evaluation and other	*%	*%	*%
	100%	100%	100%

*less than 1%

Table 2

Total Allocation of Funds by Area Requested

	Total
Program administration	49%
Staff development	24%
Equipment purchases	8%
Curriculum development	4%
Curriculum materials	2%
Promotions and marketing	4%
Travel	10%
Evaluation and other	*%
	100%

*less than 1%

Table 3

Percent Yearly Allocation of Funds

Year 1	29%
Year 2	52%
Year 3	19%
	100%

A review of the MPR data from Tables 4, 5, and 7 indicated that the funding of consortia varied from the initial request. Dollar figures revealed that the mean grant amount for 1992 was in excess of $163,000. For fiscal year 1993, it was almost $167,000. Missouri Consortia used funding from Perkins Title 3E, other Perkins, and limited local funds. The majority of support came from Title 3E, with a mean of $115,136.00. The percentage of expenditures for 1993 differed from the request in that 20% went for administration, 29% for staff development, 15% for curriculum development and review, 13% for equipment, and 15% for marketing

and promotion of programs. it should be noted that the distribution of funds for 1993, while differing from those requested, placed more emphasis on specific activities to support program implementation.

Seven focus components were identified to collect information from each consortium director to describe activities related to Tech Prep implementation. A description and a summary of the progress for each component is described in this section of the report. The information is based on data from the interviews conducted with the 12 consortium directors as well as data presented in the Missouri tables of the MPR report.

Articulation and Collaboration

The focus component examined the method of articulation, types of articulation agreements that reflect a 2+2 program of studies providing pathways into postsecondary education, and the evaluation process if any that is used once articulation agreements have been developed. Additional questions were asked that provide input into the overall coordination efforts used to involve business and industry, counselors, and vocational and academic faculty in the development of the consortium's Tech Prep efforts.

Tables 8 and 16 of the MPR data provided information about articulation activities of the various consortia. Two consortia reported no agreements. Ten had specific articulation agreements in subject areas related to granting credit, revising courses, defining course sequence, and four had general articulation agreements. The Tech Prep programs related to the 2+2 concept in

eleven consortia and in the 2+2+2 concept in one consortium. In addition, Table 8 indicated that much beginning work on career clusters as a feature of the Tech Prep programs. Table 6 provided more specific information about assistance of business and industry. In 1993, there was involvement of industry and business in providing tours in two locations and being involved in identifying outcomes in career areas and in helping to promote awards and materials. Ten of the twelve consortia reported some involvement of business and industry or labor. As reported in Table 17, occupational areas related to articulation varied among the consortia. Four consortia reported including the articulation in agriculture, eight in business, office, and marketing, five in engineering technology, six in health and human services, and seven in mechanical and industrial trades. Ten consortia reported some work on articulation in all areas.

The key findings were as follows:

- A primary focus of the effort was on explaining Tech Prep to various constituencies which included faculty, counselors, administrators, etc.
- Most consortiums were in the initial stages of establishing articulation agreements. Many details of the articulation agreements still needed to be developed and formalized.
- Articulation agreements were occurring at the program versus competency level. Most frequently noted program articulation agreements included: electronics, automotive technology, business and office technology, and drafting/design.

- A barrier in the development of articulation agreements was the lack of common programs/courses at the community college and secondary levels.
- There appeared to be some lack of flexibility at the community college level to adapt courses to articulate with the secondary level programs.
- Articulation was most effective when a direct match between an area vocational technical school (AVTS) and a community college program existed (i.e. electronics).
- College credit was found to be typically available for selected high school courses taken on the Tech Prep track, with some institutions also granting advanced placement.
- A majority of consortia anticipated revising their articulation agreements on an annual basis with formal procedures being developed with input from Dean, Department Chairperson, Principal, and/or Advisory Committee.
- Business and industry representatives have been involved primarily through advisory committee appointments, developing competencies, and assisting with business/career pathways. The degree to which they were involved with articulation efforts was not clearly identified.
- Counselors and vocational and academic teachers at the secondary level have attended workshops and served on implementation teams more often than community college faculty and staff.
- Vocational teachers have taken an active leadership role in

the development of Tech Prep integration activities and articulation agreements.

- Counselors and academic teachers have participated in meetings but have not taken an active leadership role. These individuals appear to be in an information gathering stage.

Student Program Planning and Implementation

Student program planning and implementation focused on identifying what methods, if any, were being used by counselors to enroll students in a Tech Prep program and to assess if counselors have an understanding of Tech Prep. Program planning efforts also provided a record of individualized four-year educational plan for students. These plans revealed that: (1) vocational students' program of studies match their perceived goals; and (2) vocational students are taking a sequence of mathematics, science, and communications courses that is congruent with their vocational program. School counselors and teachers utilized these programs of study models in developing students' educational plans.

The data in Table 9 of the MPR study revealed that by 1993 seven consortia had yet to define their career clusters. For those consortia with defined clusters, four included agriculture, five business, office, and marketing, three engineering technology, five health and human services, and four mechanical and industrial trades. In addition three were providing prior work site visits, and two were providing for part-time employment for students. Table 18 indicated that career guidance services were available in various ways through all of the consortia. Ten included special

career development classes, eleven had career development integrated into academic or vocational classes as well as working on individual counseling, eleven were including trips to work sites and twelve were including work on job placement by instructors or counselors.

The key findings were as follows:

- Student recruitment and outreach efforts were in the initial stages of development. Consortia recognize that this as an important area.
- A variety of products have been developed to promote recruitment efforts including information packets, posters, folders, videos, etc.
- The majority of institutions were in the planning stage of a four-year plan of study (career clusters) with counselors and teachers primarily involved with developing the plan for students.
- The career cluster approach to designing a four-year plan of study is typically introduced to 8th grade students.

Staff Development

The staff development component focused on whether there was a plan which outlined and provided staff development activities for all Tech Prep facilitators, including administrators, counselors, and academic and vocational faculty. Specific types of staff development activities that were provided during the past calendar year as well as possible activities planned for the upcoming year were identified.

The key findings were as follows:

- Workshops and meetings were held to inform staff about Tech Prep rather than approaches designed to provide more in-depth implementation and development activities.
- Successful staff development activities have included summer institutes, meetings, workshops on applied academics, teaching counseling techniques, and attendance at state and national Tech Prep conferences.
- Other frequently used approaches have been site visits to successful programs, team teaching efforts, and attending college classes.
- Faculty have been involved through school level committee meetings, inservice awareness workshops, implementation teams, and interacting with invited speakers.

Curriculum

This focus component was designed to assess the degree to which vocational and academic teachers were working together to coordinate and integrate academic and occupational education. Respondents were asked to describe ways that faculty have integrated mathematics, science, communications, and technology competencies into their curriculum to support workplace readiness skills. Tech Prep consortium directors were also asked if any career clusters have been developed thus far to assist students in completing a four-year educational plan.

The key findings were as follows:

- The number of consortia with developed career clusters

identified included: business (8), health (8), human services (5), technology (5), agriculture (3), industrial manufacturing (3), construction (2), public service (2), and science and natural resources (1).

- Concern was expressed over limited budgets to purchase curriculum materials.
- Applied academics tended to be stand-alone courses for mathematics, whereas language arts, physics, and biology units were integrated or infused into other academic courses. The MPR data in Tables 14 and 15 addressed the use of the applied academic curriculum. Eight consortia reported use of the applied biology/chemistry, ten the applied communications, two the applied economics, eleven the applied mathematics, two the chemistry in the community, and nine principles of technology during the 1993-94 school year.
- The use of commercially developed curriculum (CORD, AIT, and PACE) was evident along with team teaching activities in the beginning stages of integration efforts.

Marketing

A marketing focus category was included to identify the most successful efforts. Promotion and marketing materials should reflect the 2+2 Tech Prep concept, articulation, sequence of courses chosen within a vocational interest including the work in math, science, communications, and technology. Data were collected related to the overall perception of businesses, parents, students

and education facilitators regarding the promotion and marketing efforts utilized thus far.

The key findings were as follows:

- Primary marketing efforts included the use of brochures, flyers, newsletters, and newspaper articles.
- In some cases a resource notebook for counselors and teachers has been developed.
- Promotional items have included coffee mugs, cups, notepads, and plaques.
- Most reported that their marketing efforts in the schools have been effective.
- Minimal benefits have been derived from newsletters, direct mail letters, and television spots directed at a wider audience.

Program Effects

To fulfill program accountability requirements, consortiums will need to collect data on outcome indicators such as program enrollment, placement data, dropout rate, and test scores of Tech Prep students. Program effects are used to comprehensively measure the quality, effectiveness, and goal attainment of an educational program.

The key findings were as follows:

- The majority of consortiums have not identified if changes are occurring in student test scores or changes in dropout rate; consortiums are still looking for a method to track this information.

- Some consortiums are beginning to gather initial baseline date related to selected MMAT scores (i.e. math).

Evaluation

Evaluation of local Tech Prep education programs should have two primary objectives. First, it describes the Tech Prep program, documenting the number of program areas involved, their characteristics, the institutions involved, population served, and planning, implementation, and evaluation activities. Second, the evaluation should identify effective practices. This focus component looked specifically at the methods, if any, that the consortium has developed to evaluate their Tech Prep efforts. The evaluation component identified if a timeline had been developed depicting the consortia's goal/objectives and has it been evaluated to determine if these goals/objectives are being met on a timely basis.

The key findings were as follows:

- In all cases, project goals and objectives were developed, but no formal evaluation process had been identified.
- Evaluation methods have not been identified in most consortia.
- Consortium directors indicated that evaluation efforts will need to include (at a minimum) number of students participating, dropout rate, number of articulation agreements, and involvement of business and industry.

Program Barriers

A study of the local implementation of Tech Prep would be incomplete without focusing at least partially on barriers. A

question was asked about what barriers, if any, has the director encountered in implementing the Tech Prep concept. A national study that examined Tech Prep in the United State (Bragg, Layton, & Hammons, 1994) identified barriers that were perceived to impact local Tech Prep implementation. The top 5 barriers and their mean scores included: (1) little time for joint planning, 4.21; (2) failure of four-year schools to grant credit for Tech Prep courses, 4.08; (3) lack of general awareness of Tech Prep, 4.06; (4) lack of staff, time and money, 4.04; and (5) belief that Tech Prep is a passing fad, 3.84.

The key findings were as follows:

- The degree of business and industry involvement has been limited to serving in an advisory role.
- One common obstacle has been late receipt of funding.
- Resistance to systemic reform which is required for Tech Prep to be successful must be overcome (i.e. collaboration among academic and vocational teachers, genuine curriculum alignment and integration, etc.).
- A lack of time to implement the comprehensive range of activities required for Tech Prep.
- Turfism among academic, vocational, secondary, and postsecondary faculty and administration remains a barrier.
- Student's and the public attitude toward "vocational" versus "college prep" needs to be changed.
- A general lack of awareness and understanding of the concepts of Tech Prep.

Implications

- Tech Prep implementation will take time and involves systemic change.
- The majority of the consortiums are still in the early stages of Tech Prep program implementation.
- Given that applied academics is a primary thrust of Tech Prep, it appears that curriculum development and selection needs to be more of a priority during the 1994-1995 year, particularly related to the integration of academic and vocational instruction.
- Little evidence was observed as to concentrated collaborative efforts between vocational and academic teachers to develop and redesign curriculum that will facilitate the integration of applied academics.
- The primary approach to curriculum development is to purchase or slightly modify existing materials rather than engaging in extensive curriculum development and redesign.
- At present, it appears that marketing efforts have focused on making various constituencies aware of Tech Prep. As consortiums move into more advanced stages of development a more specific focus needs to be on career clusters and student recruitment into Tech Prep.
- Program effects are difficult to measure at this point due to the fact that the consortia were in the process of program implementation and as well as in defining who is considered to be a Tech Prep student.

- It will be vitally important that methods be developed to assess and document program effects in order for Tech Prep to merit continued federal funding.
- Methods should be developed for assessing and documenting the Tech Prep effects on student dropout rates.
- Program goals need to be clearly identified and defined to assist with the evaluation of Tech Prep efforts.
- There is an ongoing need for dialogue and information exchange among consortiums.
- There is a need to continue the dialogue concerning "skill enhanced" opportunities for students.

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Appendix A

Selected Tables of Missouri Data Reproduced from Mathematica Policy Research, Inc.

Data Released in 1994

STATE: MO

TABLE 1

CONSORTIA SIZE AND COMPOSITION
(Number of Consortia)

	Number of Postsecondary Institutions[a]							
Number of Secondary Districts	0	1	2	3	4	5-10	>10	Total
0								
1								
2								
3		1						1
4								
5-10		1	1					2
11-20		1		1	1			3
21-30		4	1			1		6
>30								
Total		7	2	1	1	1		12

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

[a]Includes community and technical colleges, four-year colleges and universities, proprietary schools, and registered apprenticeship programs.

STATE: MO

TABLE 2

REPRESENTATION ON CONSORTIA GOVERNING BOARDS

Types of Board Members	Number of Consortia	Percentage of All Consortia
Secondary School Districts		
District board members	3	25
District/school administrators	12	100
Academic faculty	7	58
Vocational faculty	5	42
Counselors	7	58
Postsecondary Institutions		
Administrators	11	92
Faculty	4	33
Counselors	5	42
Representatives of:		
Individual employers	7	58
Business/industry associations	4	33
Labor organizations	1	8
Students	1	8
Parents	3	25
Other	4	33
No Governing Board		

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

STATE: MO

TABLE 3

CONSORTIA STAFF, BY CONSORTIUM SIZE
(Number of Consortia)

	Total Number of Secondary Schools and Postsecondary Institutions in Consortium[a]					
Total FTE Professional Staff	2-5	6-10	11-25	26-49	>50	Total
0						
.01-.99			1			1
1.0-1.99			4	4	1	9
2.0-2.99			1	1		2
3.0-3.99						
4.0-4.99						
5.0-7.99						
8.0 or More						
Missing						
Mean FTE			**1.2**	**1.2**	**1.0**	**1.2**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

[a]Includes secondary schools and vocational centers involved in Tech-Prep, as well as community and technical colleges, four-year colleges and universities, proprietary schools, and registered apprenticeship programs.

STATE: MO

TABLE 4

FY 1993 TITLE IIIE GRANT AMOUNTS, BY FIRST GRANT YEAR
(Number of Consortia)

	FY 1990 or Earlier		FY 1991		FY 1992		FY 1993		Total	
FY 1993 Grant*	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
$0-24,999										
$25,000-$49,999							3	25	3	25
$50,000-$99,999							1	8	1	8
$100,000-$149,999					5	42	2	17	7	58
$150,000-$199,999										
$200,000-$249,999										
$250,000-$499,999					1	8			1	8
$500,000-$999,999										
$1,000,000 or More										
All Grant Amounts					6	50	6	50	12	100
Mean Grant Amount					**$163,383**		**$66,888**		**$115,136**	

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

NOTE: Consortia that did not report either amount of FY 1993 Title IIIE funding or the year of first Title IIIE grant do not appear in this table.

*Table is based on the reported amount of Title IIIE funding available for FY 1993 for each consortium. In some cases, amount may be a portion of a multiyear grant.

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STATE: MO

TABLE 5

AMOUNTS OF FY 1993 FUNDING FOR LOCAL TECH-PREP CONSORTIA, BY SOURCE
(Number of Consortia)

Amount of FY 1993 Funding	All Sources	Sources of Funding: Title IIIE	Other Perkins	State Funds	Local Funds[a]	Other
$1-$9,999			1		1	
$10,000-$24,999						
$25,000-$49,999	3	3	1		1	
$50,000-$99,999	1	1				
$100,000-$149,999	6	7				
$150,000-$199,999	1					
$200,000-$249,999	1					
$250,000-$499,999		1				
$500,000-$999,999						
$1,000,000 or More						
All Grant Amounts	12	12	2		2	
Mean Amount	**$120,626**	**$115,136**	**$16,440**		**$16,500**	
Minimum Amount	**$28,605**	**$28,605**	**$4,800**		**$8,000**	
Maximum Amount	**$350,000**	**$350,000**	**$28,080**		**$25,000**	

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

[a]Includes funds contributed by consortium members, businesses, corporations, labor organizations, trade associations, and foundations.

STATE: MO

TABLE 6

BUSINESS, INDUSTRY, AND LABOR INVOLVEMENT IN CONSORTIA ACTIVITIES, BY AGE OF CONSORTIUM
(Number of Consortia)

Type of Assistance	No Governing Board	Year Governing Board Established: 1990 or Earlier	1991	1992	1993	All Consortia
Working with Students						
Providing facility tours or other career awareness events				3	2	5
Providing mentors					1	1
Providing youth apprenticeship and/or work-site learning slots					1	1
Hiring graduates						
Working with Staff						
Developing curricula			1	4	1	6
Defining desired outcomes			1	3	2	6
Helping define career areas			1	1	2	4
Helping promote Tech-Prep and/or support staff development			1	3	2	6
Providing speakers and/or classroom instructors				1	1	2
Providing Material Resources						
Awards and scholarships for students						
Awards and scholarships for teachers						
Equipment, materials, space for classes or other activities				1	1	2
No Business, Industry, or Labor Involvement				3	2	5

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

STATE: MO

TABLE 7

USES OF CONSORTIUM FUNDS, FY 1993
(Percentage of Total Expenditures)

	Mean	Minimum	Maximum
General Administration	19.9	10.0	50.0
Staff Development	28.6	5.0	47.0
Curriculum Development/Review	15.2	0.0	30.0
Equipment for Secondary/ Postsecondary Programs	13.1	0.0	40.0
Marketing/Promotion	14.8	2.0	50.0
Evaluation	3.8	0.0	10.0
Allocations to Consortium Members	4.8	0.0	25.0
Other	0.0	0.0	0.0

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

STATE: MO

TABLE 8

FEATURES OF LOCAL TECH-PREP PROGRAMS

	Number of Consortia	Percentage of All Consortia
Total Number of Consortia	12	100
Reported Program Model		
2 + 2	11	92
3 or 4 + 2		
2 + 2 + 2	1	8
3 or 4 + 2 + 2		
Middle school + 4 + 2		
Middle school + 4 + 2 + 2		
Other/missing		
Individual Districts/Schools Have Defined Core Program	4	33
Uniform, Defined Core Program Adopted by All Members	2	17
Elements of Uniform Core Programs		
Completion of student plan		
Choice of broad career cluster	1	8
Choice of occupational specialty	1	8
Applied academic courses		
Required academic/occupational courses related to career cluster	2	17
Required number of career-related courses		
Career development classes/individual guidance		
Workplace exposure/instruction	1	8
Paid youth apprenticeship	1	8
Assignment to workplace mentor	1	8

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

STATE: MO

TABLE 9

CHOICES AVAILABLE TO TECH-PREP SECONDARY STUDENTS, BY AGE OF CONSORTIUM
(Number of Consortia)

Type of Assistance	No Governing Board	Year Governing Board Established: 1990 or Earlier	1991	1992	1993	All Consortia
Students Explicitly Choose Tech-Prep (in at Least Some Member Districts)						
Defined Tech-Prep Career Clusters						
No broadly defined career clusters				4	3	7
Agriculture			1	2	1	4
Business/Office/Marketing			1	3	1	5
Engineering/Technology			1	1	1	3
Health/Human Services			1	3	1	5
Mechanical/Industrial or Practical Arts or Trade			1	3		4
Other			1	1		2
Workplace Experiences Available to Students						
None			1	6	2	9
Employer work-site visits				1	2	3
Paid summer jobs				1	1	2
Unpaid summer jobs						
Paid part-time employment during school year				1	2	3
Unpaid employment/internships during school year						
Assignment to workplace mentor						

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

STATE: MO

TABLE 14

INTRODUCTION OF APPLIED ACADEMIC CURRICULA IN PAST 24 MONTHS

	Consortia		Secondary Schools		Postsecondary Schools	
Subject Area	Number	Percentage	Number	Percentage[a]	Number	Percentage[b]
Biology	6	50	16	6	1	4
Chemistry	5	42	12	4		
Mathematics	10	83	87	32	2	8
Physics	8	67	18	7	3	12
English and Other Language Arts	11	92	73	27	1	4
Economics	1	8	2	1		
History						
Other	2	17	8	3		
None	1	8				

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

[a]The denominator used in calculating the percentage is the statewide sum of the reported number of secondary schools in each consortium.

[b]The denominator used in calculating the percentage is the statewide sum of the reported number of community and technical colleges, four year colleges and universities, proprietary schools, and registered apprenticeship programs in each consortium.

Note: Tables 10-13 omitted.

STATE: MO

TABLE 15

USE OF COMMERCIALLY AVAILABLE APPLIED ACADEMIC CURRICULA,
SCHOOL YEAR 1993-94

	Consortia		Secondary Schools		Postsecondary Schools	
Curriculum	Number	Percentage	Number	Percentage[a]	Number	Percentage[b]
Applied Biology/Chemistry	8	67	15	6	1	4
Applied Communications	10	83	68	25	1	4
Applied Economics	2	17	3	1		
Applied Mathematics	11	92	92	34	1	4
Chemistry in the Community	2	17	6	2		
Principles of Technology	9	75	36	13	2	8
Other	5	42	8	3	1	4
None	1	8				

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

[a]The denominator used in calculating the percentage is the statewide sum of the reported number of secondary schools in each consortium.

[b]The denominator used in calculating the percentage is the statewide sum of the reported number of community and technical colleges, four year colleges and universities, proprietary schools, and registered apprenticeship programs in each consortium.

STATE: MO

TABLE 16

EXTENT AND SCOPE OF ARTICULATION AGREEMENTS

	Consortia		Postsecondary Institutions	
	Number	Percentage	Number	Percentage[1]
No Articulation Agreements	2	17	3	12
General Articulation Agreements	4	33	4	16
Specific Articulation Agreements	10	83	12	48
Specific Articulation Agreement Provisions				
Establishing conditions for granting credit	10	83	10	40
Revising postsecondary courses	5	42	5	20
Revising secondary courses	7	58	7	28
Granting advanced study in apprenticeship	1	8	1	4
Providing joint/exchange teaching	2	17	2	8
Defining secondary/postsecondary course sequences	8	67	8	32
Ensuring Tech-Prep graduates slots in postsecondary schools	2	17	2	8

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

[1]The denominator used in calculating the percentage is the statewide sum of the reported number of community and technical colleges, four year colleges and universities, proprietary schools, and registered apprenticeship programs in each consortium.

STATE: MO

TABLE 17

OCCUPATIONAL EMPHASIS OF ARTICULATED PROGRAMS
(Number of Consortia)

	Number of Articulated Occupational Programs						
Areas/Career Clusters	0[a]	1	2-4	5-10	11-15	16-20	>20
Agriculture	8	4					
Business/Office Marketing	4	2	6				
Engineering Technology	7	4	1				
Health Human Services	6	5	1				
Mechanical/Industrial or Practical Arts or Trade	5	1	4	2			
All Areas	2	1	3	4	2		

SOURCE: Inventory of Local Tech-Prep Planning and Implementation. Fall 1993.

[a]Consortia appear in this column if they have no articulation agreements in the specific occupational area or if they have no specific articulation agreements at all.

STATE: MO

TABLE 18

CONSORTIA PROVIDING CAREER DEVELOPMENT AT SOME OR ALL SCHOOLS

Activity Type	Grade 8 or Earlier		Grades 9 to 12		Postsecondary Level		Total	
	Number of Consortia	Percentage	Number of Consortia	Percentage	Number of Consortia	Percentage	Number of Consortia	Percentage
Special Career Development Classes	10	83	10	83	7	58	10	83
Career Development Integrated in Academic or Vocational Classes	8	67	11	92	8	67	11	92
Individual Counseling	5	42	10	83	10	83	11	92
Special Tech-Prep Counseling Materials	3	25	9	75	6	50	10	83
Development of Secondary/ Postsecondary Student Plans	4	33	9	75	5	42	9	75
Career Exploration Software	6	50	12	100	8	67	12	100
Trips to Work Sites	5	42	10	83	9	75	11	92
Job Placement by Course Instructors	N.A.		9	75	11	92	12	100
Job Placement by Guidance Counselors	N.A.		11	92	8	67	11	92
Job Placement by Special Placement Staff	N.A.		10	83	10	83	12	100
Other	1	8					1	8

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, Fall 1993.

NOTE: N.A. means not applicable.

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